

Aero Design Ltd.**Work Order Control Sheet**Work Order#: **2015-86** Date Opened: **06-Aug-15** Title: **Fabrication**Aircraft OEM: **Bell** Aircraft Model: **407** Product Type: **Cargo Basket** Product Model: **Wide** Quantity: **5****Work Order Contents**

Work Order/Build Sheets (Procedures Provided)
Additional Work Sheets (Standard Practice)
Drawings (See List Below)
Parts Distribution Sheet
Sub Component Tags
Completed Certification (Original)
Time Sheet (R&D)
Notes

Initial or N/A

| |
|-----|
| JR |
| N/A |
| JR |
| JR |
| JR |
| N/A |
| N/A |
| N/A |

Build Sheet Contents

Tasks Initialled
Dual Inspections Initialled

Initial or N/A

| |
|----|
| JR |
| JR |

Drawing List

| Drawing # | Rev # | Description | Initial or N/A |
|-----------|-------|-----------------------|----------------|
| 70411 | 0 | Front End Cut Out Mod | JR |
| 94522 | 0 | Aft Hoop | JR |
| 94521 | 0 | Fwd Hoop | JR |
| 94527 | 0 | Placard | JR |
| 94520 | 0 | Hoop | JR |
| 69812 | 3 | Lid | JR |
| 94511 | 0 | Body | JR |
| 94510 | 0 | Basket | JR |

Component Completion

Quantity Complete on This Work Order
Quantity Incomplete on This Work Order
Further Processing Required Before Release
Release to Stock as Components

As Instructed

| |
|-----|
| 3 |
| 2 |
| N/A |
| JR |

Certification

Form One Completed
Serviceable (Green) Tag Completed
In Process (Yellow) Tag Completed
Unserviceable (Red) Tag Completed
Parts Tracking Tag (White) Completed
Parts Placed in Stores for Distribution

Initial or N/A

| |
|-----|
| N/A |
| N/A |
| N/A |
| N/A |
| JR |
| N/A |

Additional Documentation

Documentation of a minor change
Non-Conformance Report Required
Service Difficulty Report Required

Initial or N/A

| |
|-----|
| N/A |
| N/A |
| N/A |

Billing

Local (Aero Design)
Research and Development
Third Party

Initial or N/A

| |
|-----|
| JR |
| N/A |
| N/A |

Traveller

Initial or N/A

| |
|--|
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| |
| |
| |
| |
| |
| |

Work performed by:

Print: Jason RekveSign: Jason RekveSCA: AD01Date: 14-Aug-15

ICC / Dual Inspection performed by:

Print: Jeff ClarkeSign: Jeff ClarkeSCA: AD02Date: 14-Aug-15

Work Order closed by:

Print: Jason RekveSign: Jason RekveSCA: AD01Date: 01-Sep-15

Approved Manufacturing Facility 73-04

Form 20.D.03

Rev. Original 23 Sep 2014



Aero Design Ltd.

9888 A Malaspina Rd., Powell River, BC
V8A 0G3, 604-483-AERO (2376)

Quantity: 1

PN: 94521-01

Aircraft: Bell

Model: 407

Description: Forward Hoop

Supplier: Aero Design

Color: N/A

WO#: 2014-66

PO# 14060



Aero Design Ltd.

9888 A Malaspina Rd., Powell River, BC
V8A 0G3, 604-483-AERO (2376)

Quantity: 1

PN: 94522-01

Aircraft: Bell

Model: 407

Description: Low Mount AFT Hoop

Supplier: Aero Design

Color: N/A

WO#: 2014-66

PO# 14060



Aero Design Ltd.

9888 A Malaspina Rd., Powell River, BC
V8A 0G3, 604-483-AERO (2376)

Quantity: 1

PN: 94520-01

Aircraft: Bell

Model: 206L/407

Description: Wide Hoop

Supplier: Aero Design

Color: N/A

WO#: 2015-25

PO# 14099



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Description: Wide Hoop

Supplier: Aero Design

Color: N/A

WO#: 2015-25

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Color: N/A

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Color: N/A

WO#: 2014-66

PO# 14060



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V8A 0G3, 604-483-AERO (2376)

| | | |
|--------------|--------------------|------------|
| Quantity: | 1 | |
| PN: | 94522-01 | |
| Aircraft: | Bell | |
| Description: | Low Mount AFT Hoop | Model: 407 |
| Supplier: | Aero Design | |
| Color: | N/A | |
| WO#: | 2014-66 | |
| | | PO# 14060 |



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Color: N/A

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CARGO BASKET BODY FABRICATION - COMMON

2015-86
x/ 82 Rims
3 complete dk

General

These instructions apply to all cargo basket body assemblies. Refer to the following drawings, at the current revision, for dimensions and details:

Bell 206L/407 – Right side only

69811, Revision 3 – Standard Low Mounted Basket

94511, Revision 0 – Extra-Wide Low Mounted Basket ✓

94611, Revision 0 – Extra-Wide Low Mounted Ski Basket

76611, Revision 0 – High Mounted Ski Basket

Options 70404, Revision 2 – Front end cutout – 698

70411, Revision 0 – Front end cutout – 945/946

Eurocopter AS350/AS355 – left or right

77611, Revision 1 – Short Basket

76411, Revision 3 – Medium Basket (left or right)

78411, Revision 2 – Long Basket

94011, Revision 0 – Extra Large (ski) Basket

Options 70406, Revision 2 – Front end cutout – 764/776/784/940

Robinson R44 – left or right

90611, Revision 0 – Standard Basket (left or right)

Bell 206B – right side only

80211, Revision 0 – Short Basket

80311, Revision 0 – Medium Basket

81111, Revision 0 – Long Basket

Options 70406, Revision 2 – Front end cutout – 802/803/811

Bell 429 – right or left

95911, Revision 0 – Standard Basket

Bell Medium – left or right

75111, Revision 0 – Standard Basket

95511, Revision 0 – Extra Large (ski) Basket

Options 70407, Revision 1 – Front end cutout – 751

704, Revision – Front end cutout – 955

MD600

82811, Revision 0 – Standard Basket

Options – Applicable to all models

70403, Revision 5 – Auxiliary Latch

CARGO BASKET BODY FABRICATION - COMMON

Complete
(initial or SCA #)

Work Order: 2015-86

Date Open: 06 Aug 15

1. Rim Assembly – Basket Body

- a. Cut and fit $\frac{3}{4}$ " x 0.035 material to fit rim jig.
 - i. 1 or 2 lid prop bushing holes in short tube – refer to drawing
- b. Record material PO on attached material list.
- c. Remove writing on tubes with acetone and scotch bright.
- d. For extra large baskets – drill #30 (0.129) vent holes to vent stringer tubes into rims.
- e. 94611 (206L/407 XL ski) only – drill for 4 threaded bushings before assembling rim.

dk dk dk dk dk

2. Weld Rim Assembly.

- a. Record welding rod PO on attached material list.
- b. 94611 (206L/407 XL ski) only – weld 4 threaded bushings into inboard rim tube.

AD-05 AD-05 AD-05 AD-05
AD-05

3. Inspection

- a. Rim for complete welds

dk dk dk dk dk

4. Frame assembly – body

- a. General
 - i. Vent holes shall be #30 (0.129), and located inside the structure wherever possible to allow venting of weld gasses through existing holes (i.e. lid prop bushing, hoops, etc.)
- b. Grind corner welds from step 2 on rim to allow hoops to sit flat.
- c. Pull required hoops from stock - standard, attachment, handle.
 - i. If hoops are not in stock see detailed procedure sheet for specific hoop fabrication.
 - ii. Ensure vent hole is located at centre of tube to vent spine tubes.
- d. Assemble hoops with attachment lug locating jig and hoop spacing jig.
 - i. Ensure correct order and orientation of hoops. Refer to drawing.
 - 1. Attachment lugs are on inboard side.
 - 2. Handle bracket bushings are on outboard side, second hoop from both ends.
May be on attachment hoops.
 - ii. Run 3/8-24 tap into attachment lugs to ensure clear threads.
 - iii. Bolt attachment lug locating jig to attachment hoops with 3/8-24 bolts.
 - iv. Attach inboard and outboard hoop spacing jigs to all hoops using 1" C-clamps. Raise jigs approximately 2" off table to allow room to weld around hoops.
 - v. Attach bottom (spine) jig to all hoops using 1" C-clamps along the centre line of the basket. Ensure jig is straight prior to tightening all clamps.
- e. Cut $\frac{1}{2}$ " x 0.035 material to fit spine jig.
- f. Cut $\frac{1}{2}$ " x 0.035 material for strut to fit from lower inboard attachment to upper outboard rim.
 - i. Refer to applicable drawing for position, not required on some baskets.
- g. Option: Cut $\frac{1}{2}$ " x 0.035 material for front end cutout. Record material PO on attached material list.
- h. 90611 (R44) only: Cut $\frac{1}{2}$ " x 0.035 material to fit front end structure. Record material PO on attached material list.
- i. Drill vent holes into attachment hoop and/or rim to vent strut(s) and front end cutout.

dk dk dk

CARGO BASKET BODY FABRICATION - COMMON

Complete
(initial or SCA #)

- j. Record hoop WOs and material POs on attached material list.
- k. Remove writing on tubes with acetone and scotch bright.
- l. Insert rim assembly into jig and set frame assembly onto rim. Ensure correct orientation of lid prop bushings in rim to frame. Bushing hole must be closer to attachment side.
- m. Align hoops to rim in accordance with drawing. General positions:
 - i. Extra large baskets
 - 1. inboard side of hoops (attachment side) aligns to OUTSIDE of rim
 - 2. outboard side of hoops (handle side) aligns to INSIDE of rim
 - 3. forward and aft hoops align to INSIDE of rim
 - ii. All other baskets
 - 1. inboard side of hoops (attachment side) aligns to INSIDE of rim
 - 2. outboard side of hoops (handle side) aligns to INSIDE of rim
 - 3. forward and aft hoops align to INSIDE of rim, except R44

AD-05
AD-05
AD-05

5. TIG weld frame to rim assembly.

- a. Ensure lug locating jig and hoop locating jigs are in place. Jigs must remain in place for as long as practical during welding.
- b. Strut tubes and front end cutout (see step 4.f. and g.) must be welded in place after the hoops are welded to the rim. Jig(s) must be in place prior to welding strut tubes.
- c. Robinson R44 (90611) requires fitting and welding of forward end after remainder of basket frame is welded. Use jig to support front hoop.
- d. Record welding rod PO on attached material list.

6. Inspection

- a. Frame assembly for complete welds.

OK OK OK

7. Mesh assembly.

- a. Pull sheet of expanded mesh from stock. Record material PO on attached material list.
- b. Cut mesh to size for body.
- c. Remove surface rust with scotch-brite.
- d. Bend body mesh – use table with bend markings on top. Lock wheels on table.
 - i. For extra wide baskets only –
 - 1. Set $\frac{3}{4}$ " angle along edge of table under mesh sheet. Set 1.5" square tube on top of mesh aligned with angle on edge of table. Clamp in place with 6" C-clamps.
 - 2. Bend upper edge of sheet just past a cell intersection to make a flange 2.5" - 3.25" wide. Closer to 2.5" is preferred, full cell intersection on flange side at bend is required.
 - 3. Bend down by hand as far as possible, then use a hammer to flatten the bend tight against the angle on the edge of the table.
 - ii. Using markings on table, align sheet to indicated edge.
 - iii. Using markings on table, align 3" tube to required position and clamp tube in place.
 - iv. Bend mesh by hand tightly over tube along length of tube.
 - v. Keeping mesh in place, un-clamp 3" tube, move to other position and clamp tube in place.
 - vi. Bend mesh by hand tightly over tube along length of tube.
- e. Install attachment lug jig onto basket frame.

OK OK OK



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V8A 0G3, 604-483-AERO (2376)

Quantity: 1

PN: 94520-01

Aircraft: Bell

Model: 206L/407

Description: Wide Hoop

Supplier: Aero Design

Color: N/A

WO#: 2015-25

PO# 14099

- f. Ensure end struts are welded in basket frame if required by the drawing.
- g. Insert mesh into basket.
 - i. General
 1. Some cells may interfere with correct positioning, especially at the upper corners and around struts. Bend cell(s) in as required, do not cut cells off.
 2. Ideally welds will be located on mesh intersections. Shift mesh if possible to minimize welds located off mesh intersections.
 3. Ensure mesh reaches all edges of basket BEFORE trimming. Regardless of progress in clamping, remove clamps and shift mesh if required.
 4. Ensure cleco clamps are placed from the inside of the basket to allow removal during welding. Cleco clamps may be used from the outside during fitting, but must be removed prior to welding.
 - ii. Extra large baskets only – seat corner of mesh with flange into inboard upper corner of frame. Use C-clamps on edge of flange as required to maintain tight fit.
 - iii. Starting at inboard top edge of basket, clamp mesh to hoop near top rim using cleco clamps onto hoops. For regular size baskets, edge of mesh should sit approximately half way up rim tube.
 - iv. Working down the inboard side, clamp mesh to hoops with cleco clamps. Clamp down into radius of hoop and continue clamping as required to maintain tight fit in corner of hoop. After the corners are tight, two clamps just onto the radius on both ends should be sufficient to hold the corner tight, remove all extra clamps.
 - v. Clamp mesh to spine in at least 1 place per section.
 - vi. Working up the outboard side, clamp the mesh into the radius of hoop and continue clamping as required to maintain tight fit in corner of hoop. After the corners are tight, 2 clamps just onto the radius on both ends should be sufficient to hold the corner tight, remove all extra clamps.
 - vii. Trim upper outboard edge of mesh if required, edge of mesh must be low enough on rim tube to prevent the weld from protruding above the edge of the rim. Some sheets are tapered and may require ½ to 1 cell to be removed over some or all of the length of the basket. De-burr cut edges with a sanding disc on a die-grinder. Straighten cut cells with duck-bill pliers. Clamp mesh near upper edge to hoops with cleco clamps after trimming.
 - viii. Trim ends to land on hoops, at mesh intersections if possible.
- h. Cut mesh to fit ends. Record material PO on attached material list.
 - i. Remove surface rust with scotch-brite.
 - ii. Ensure mesh is cut at intersections where possible.
 - iii. Bend top edge of mesh 1/8"-3/16" down at 45 degrees
 - iv. Cut for front end cutout if required.
- i. 90611 (R44) only: Cut mesh to fit upper forward end. Record material PO on attached material list.
 - i. Remove surface rust with scotch-brite.
 - ii. Ensure mesh is cut at intersections where possible.
 - iii. Bend top edge of mesh 1/4" down at 60 degrees.
 - iv. Fit mesh to front end of basket.

CARGO BASKET BODY FABRICATION - COMMON

Complete

(initial or SCA #)

AD-05 AD-05 AD-05

8. Weld mesh to frame assembly per drawing.

- a. Ensure lug locating jig is in place prior to welding.
- b. General welding requirements for all baskets, MIG welding:
 - i. Every intersection at top edges.
 - ii. Every intersection at ends.
 - iii. First 5 intersections down on hoops, then every second intersection.
 - iv. Every intersection along spine.
 - v. Extra large baskets – every intersection along corner.
 - vi. Every intersection around ends
 - vii. Every intersection along struts (if applicable)
- c. Bend and trim cells bent in to fit mesh as required and weld in position.
- d. Grind high spots off body mesh welds on ends before welding end mesh.
- e. 90611 (R44) only – weld lid prop bushing (step 9) into rim BEFORE welding upper mesh on forward end of basket assembly.
- f. Record welding rod PO on attached material list.

9. Weld basket components

- a. TIG weld lid prop bushing(s), one or two per drawing.
 - i. Record welding rod PO on attached material list.
 - ii. Record lip prop bushing WO on attached material list.
- b. TIG weld caps to close top of 1" hoops as applicable.
- c. 94611 (Bell206L/407 XL ski) only: cut rim over cross tube gap.
 - i. Cut inboard rim on aft end. Grind flush with hoops.
 - ii. TIG weld caps on open tubes.
 - iii. Record cap material PO on attached material list.
- d. 95911 (Bell 429) only: placard bracket to forward upper corner of basket.
 - i. Record welding rod PO on attached material list.
 - ii. Record placard bracket WO on attached material list.

AD-05 AD-05 AD-05

AKK

10. Clean up

- a. Grind high spots off mesh welds.
- b. Tighten mesh using special pliers. Tighten enough to remove "oil canning", where mesh springs in or out. Do not tighten in corners of hoops, mesh will be deformed.
- c. Drill #9 through lid prop bushing(s). De-burr hole(s).
- d. Remove surface rust with scotch-brite pad.

11. Final Inspection

To be completed by a different person than the previous steps.

- a. Basket body assembly for complete welds, and required minimum mesh weld locations.
- b. Filled vent holes – usually on hoops
- c. Overall condition and conformity to drawing(s).
 - i. Hoops for height.
 - ii. Rim for width and length and alignment.
 - iii. Lid prop lugs in correct ends.
 - iv. Fore/aft strut in hoop if required by drawing.
- d. Material lists complete.

AD02

AD02

AD02

CARGO BASKET BODY FABRICATION - COMMON

Complete
(initial or SCA #)

e. Tag complete basket body assembly in preparation for powder coating.

12. Powder Coating

- a. Parts are to be powder coated white in accordance with commercial practices.
- b. Record powder coating PO.
- c. Inspect powder coating on receiving.
- d. Tag basket body assembly and place into stock in preparation for assembly.

1) AD02

2) AD02

3) AD02

Work Order: 2015-86Date Opened: 06 Aug 15Material Tracking Sheet
Bell 206L / 407
Extra Wide Basket Body Fabrication

2 of 2

| Ass'y Step | Qty | Detail Drawing | Part Number | Description | Material | PO/WO |
|----------------|-------|----------------|-------------|------------------------------------|-----------------------------------|---------------|
| Step 7 | | | | <i>Mesh Assembly</i> | | |
| | . 1 | | -- | Mesh (Body - 56" x 75") | 3/4-16F Expanded Mild Steel sheet | 15037 / 14012 |
| | . 2 | | -- | Mesh (End - 24.75" x 16.75") | 3/4-16F Expanded Mild Steel sheet | 15037 |
| Step 8 | | | | <i>Weld Mesh</i> | | |
| | . A/R | | -- | Welding Rod | ER70S-6 MIG Wire | 15027 |
| Step 9 | | | | <i>Weld Basket Components</i> | | |
| | . 1 | | 49215-01 | Spacer (Lid prop) | 304 Stainless Steel, 1/2" Dia. | 205-07 |
| | . A/R | | -- | Welding Rod | ER308L TIG Rod | 14028 |
| Step 10 | | | | <i>Clean Up</i> | None | |
| Step 11 | | | | <i>Inspection - Final Assembly</i> | None | |
| Step 12 | | | | <i>Powder Coating</i> | | |

Work Order: _____

Material Tracking Sheet

1 of 2

Bell 206L / 407

Date Opened: _____

Extra Wide Basket Body Fabrication

| Ass'y Step | Qty | Detail Drawing | Part Number | Description | Material | PO/WO |
|------------------|-------|----------------|-----------------|------------------------------------|------------------------------------|---------------|
| | | | 94511-01 | Basket Assembly | | |
| Step 1 | | | | <i>Rim Assembly</i> | | |
| | . 2 | | -- | 3/4" Tube - Long Rim (75.75") | 4130 Steel, 3/4" x 0.035 Sqr. Tube | 14009 |
| | . 2 | | -- | 3/4" Tube - Short Rim (25.5") | 4130 Steel, 3/4" x 0.035 Sqr. Tube | 14009 / 13027 |
| | . 1 | | -- | 3/4" Tube - Long stringer (74.25") | 4130 Steel, 3/4" x 0.035 Sqr. Tube | 14009 |
| | . 3 | | -- | 3/4" Tube - Short stringer (2.5") | 4130 Steel, 3/4" x 0.035 Sqr. Tube | 14009 |
| Step 2 | | | | <i>Weld Rim Assembly</i> | | |
| | . A/R | | -- | Welding Rod | ER70S-2 TIG Rod | 14033 |
| Step 3 | | | | <i>Inspection - Rim</i> | None | |
| Step 4 | | | | <i>Frame Assembly</i> | | |
| | . 1 | | 94520-01 | Hoop - standard | 4130 Steel, 1/2" x 0.035 Sqr. Tube | 2015-25 |
| | . 2 | 84262 | 94520-01 | Hoop - with handle provisions | 4130 Steel, 1/2" x 0.035 Sqr. Tube | 2015-25 |
| | . 1 | | 94521-01 | Forward Attachment Hoop | | 201468 |
| | . 1 | | 94522-01 | Aft Attachment hoop | | 201466 |
| | . 4 | | -- | 1/2" Tube - spine | 4130 Steel, 1/2" x 0.035 Sqr. Tube | 14009 |
| | . 2 | | -- | 1/2" Tube - strut | 4130 Steel, 1/2" x 0.035 Sqr. Tube | 14009 |
| Step 4.g. | | 70411 | 70411-01 | Option: Front End Cutout | | |
| | | | 70411-03 | 1/2" Tube | 4130 Steel, 1/2" x 0.035 Sqr. Tube | 14009 |
| | | | 70411-04 | 1/2" Tube | 4130 Steel, 1/2" x 0.035 Sqr. Tube | 14009 |
| Step 5 | | | | <i>Weld Frame Assembly</i> | | |
| | . A/R | | -- | Welding Rod | ER70S-2 TIG Rod | 14033 |
| Step 6 | | | | <i>Inspection - Frame Assembly</i> | None | |



WO# 2015-86

See Build
Sheets